

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

JAPANESE PATENT OFFICE  
PATENT JOURNAL (A)  
KOKAI PATENT APPLICATION NO. HEI 9[1997]-28412

Int. Cl.<sup>6</sup>: A 43 B 23/02  
1/02  
5/00

Filing No.: Hei 7[1995]-205303

Filing Date: July 18, 1995

Publication Date: February 4, 1997

No. of Claims: 6 (Total of 6 pages; FD)

Examination Request: Not filed

SPORTS SHOES

Inventors:

Manabu Kuramoto  
ASICS Corporation,  
7-1-1, Minatojima-Nakamachi,  
Chuo-ku, Kobe-shi, Hyogo-ken

Yoshihito Hagiwara  
ASICS Corporation,  
7-1-1, Minatojima-Nakamachi,  
Chuo-ku, Kobe-shi, Hyogo-ken

Masakane Ishihara  
ASICS Corporation,  
7-1-1, Minatojima-Nakamachi,  
Chuo-ku, Kobe-shi, Hyogo-ken

Osamu Sasada  
ASICS Corporation,  
7-1-1, Minatojima-Nakamachi,  
Chuo-ku, Kobe-shi, Hyogo-ken

Hisayoshi Tamura  
ASICS Corporation,  
7-1-1, Minatojima-Nakamachi,  
Chuo-ku, Kobe-shi, Hyogo-ken  
Masayuki Motoike  
ASICS Corporation,  
2900 Watashi-cho, Kikaiminatu-shi  
Totsutori-ken

Applicant:

000000310  
ASICS Corporation  
7-1-1, Minatojima-Nakamachi,  
Chuo-ku, Kobe-shi, Hyogo-ken

Agent:

Yoshinobu Yamamura, patent  
attorney

[There are no amendments to this patent.]

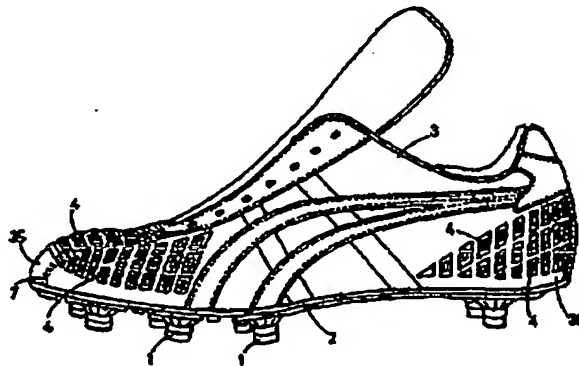
### Abstract

#### Problem to be solved

To provide a sports shoe that is lightweight, fits the foot well, has superior durability and wear resistance, and is capable of easily controlling a ball even for a backward pass, in a sport shoe provided with resin projections for ball control.

#### Solution

A sports shoe that provides multiple resin projections (4) for ball control on the outer surface of upper (3), wherein said multiple projections (4) are provided for front foot part (35) and heel part (36) of upper (3), and the outer surface of said upper (3) is constituted of a non-woven fabric composed of napped suede-like synthetic fibers.



### Claims

1. A sports shoe characterized by the fact that it is a sports shoe that provides multiple resin projections for ball control to the outer surface of an upper, wherein said multiple projections are provided for the front foot part and the heel part of the upper and the outer surface of said upper is constituted of a non-woven fabric composed of napped suede-like synthetic fibers.

2. The sports shoe according to Claim 1,

wherein the material of the front foot part of the aforementioned upper is formed from a laminated material wherein a woven fabric is interposed between a pair of non-woven fabrics, the outer surface of the non-woven fabric positioned as the outer surface layer is formed as a napped suede-like surface, and the inner surface of the non-woven fabric positioned as the inner surface layer is formed as a napped suede-like synthetic resin.

3. The sports shoe according to Claim 1,

wherein the material of the front foot part of the aforementioned upper has a backing material that is superimposed on the back surface of the aforementioned non-woven fabric, and this backing material and the non-woven fabric are combined into one piece by being stitched together at the front foot part.

4. The sports shoe according to Claim 1,

wherein the aforementioned projections, which consist of the same kind of synthetic resin that comprises the aforementioned non-woven fabric, are fixed to the upper when the synthetic resin impregnates the outer surface of the aforementioned non-woven fabric.

5. The sports shoe according to Claim 1,

wherein the aforementioned sports shoe is provided with many cleats that are fixed to the sole of the shoe and an insole that is laid under the sole of a foot to ease the impact force from the cleats,

and the aforementioned insole comprises a pair of foam resin layers that are laminated beneath the top surface fabric, and the Young's modulus of the foam resin layer comprising the lower layer is set to be greater than that of the foam resin layer comprising the upper layer.

6. The sports shoe according to Claim 5,

wherein many small through-holes are formed in the aforementioned foam resin layer composing the lower layer.

### Detailed explanation of the invention

[0001]

Industrial application field

The present invention relates to a sports shoe provided with projections for ball control.

[0002]

Conventionally, sport shoes provided with multiple resin projections for ball control for the outer surface of the upper have been proposed as shoes for soccer and football (e.g., refer to Japanese Kokoku Patent Nos. Sho 63[1988]-13681 and Hei 1[1989]-19883). In these shoes, a change can be imparted to the ball, when curving it, shooting it, etc., by enhancing the coefficient of friction with the ball by means of the projections and thereby increasing the rotational velocity of the ball. Therefore, the technique of ball control can be learned easily.

[0003]

However, in the aforementioned prior art, the projections were provided only at the front foot part of the shoes, and no consideration was given to a backward pass in soccer.

[0004]

Also, in a sport in which kicking, running, stopping, and turning are repeated over a long period of time, such as in soccer and football, foot fatigue is great, so that making the shoes lightweight is very important. Furthermore, to achieve accurate ball control, it is preferable for the shoes to be well fitted to the foot and for the entire upper to fit the foot.

[0005]

However, when a material that is lightweight and fits the foot well is used for the upper, there was a tendency for the material of the upper to be damaged easily from kicking and sliding, since this type of material generally has low durability and wear resistance. Therefore, in the conventional technology it was not possible to use this type of material for sport shoes.

[0006]

Therefore, the purpose of the present invention is to provide, in a sports shoe with attached resin projections for ball control, a sports shoe that is lightweight, fits the foot well, has superior durability and wear resistance, and is capable of easily controlling a ball even for a backward pass.

[0007]

Means of solving the problems

To achieve the aforementioned purpose, the present invention provides multiple projections for the front foot part and the heel part of the upper, and the outer surface of the aforementioned upper is constituted of a non-woven fabric composed of napped suede-like

synthetic fibers. Incidentally, the projections of the present invention are composed from synthetic resin, synthetic rubber, or natural rubber.

[0008]

According to the present invention, the outer surface of the upper is constituted of a napped suede-like non-woven fabric, and the upper is composed of a flexible material, so that it fits the foot well and is lightweight. Also, the multiple projections were provided not only at the front foot part but also at the heel part, so that a ball can be controlled easily even for a backward pass by means of a heel kick. Furthermore, multiple projections are provided at the front foot part and the heel part so that even if a soft material that is lightweight and fits the foot well is used, the section likely to be damaged by kicking and sliding is protected with multiple projections. Therefore, sufficient wear resistance and durability can be obtained.

[0009]

Embodiments of the invention

Below, the embodiments of the present invention will be explained according to the figures. Figures 1-3 show the first embodiment. In Figure 1, the sports shoe in this embodiment is a soccer shoe wherein many cleats (1) are fixed to the outer sole (2).

[0010]

Multiple resin projections (4) for ball control are provided for upper (3) that covers the foot, on the outer surface of front foot part (35) and heel part (36). These resin projections (4) are composed of a synthetic resin such as polyurethane, and as shown Figure 2, they are formed in two parts, which are anchoring part (40) of large base area and controlling part (41) of small base area.

[0011]

The outer surface layer of upper (3) is formed from non-woven fabric (31). Furthermore, the material of front foot part (35) of upper (3) is formed from a laminated material wherein woven fabric (backing material) (32) composed of a cotton fabric is interposed between a pair of non-woven fabrics (31) and (33). These laminated materials, namely, non-woven fabric (31), woven fabric (32), and non-woven fabric (33), are not bonded to each other but are integrated into one piece by being stitched together with thread (7) of Figure 1. Outer surface (31a) of non-woven fabric (31), which is the outer surface layer (upper layer) in Figure 2, consists of napped suede-like synthetic fibers. On the other hand, inner surface (33a) of non-woven fabric (33), which is the inner surface layer (lower layer), consists of napped suede-like synthetic

fibers. Consequently, it is lightweight and very flexible. Aforementioned non-woven fabrics (31) and (33) are composed of fibers that contain polyurethane synthetic fibers, and Ecsaine (registered trademark) manufactured by the Toray Co., Ltd. can be used.

[0012]

Anchoring part (40) of said resin projections (4) is fixed to upper (3) due to polyurethane resin impregnating section (31a) where the outer surface layer is napped of the non-woven fabric (31).

[0013]

Figure 3(a) shows the insole (5) of a shoe. This insole (5) cushions the impact forces along the sole of a foot from cleat (1) in Figure 3(b). Cleat (1) is fixed to outer sole (2) and insole (6) with screw member (10). Aforementioned insole (5) comprises a pair of foam resin layers (52) and (53) laminated beneath fabric (51) that comprises the woven fabric of the upper layer. The upper foam resin layer (52) is composed of, for example, EVA (ethylene · vinyl · acetate). On the other hand, the lower foam resin layer (53) is composed of polyethylene. Lower foam resin layer (53), is harder than upper foam resin layer (52). Specifically, the Young's modulus is set to be greater. Incidentally, many small through-holes (53a) (e.g., with a diameter of about 1 mm) are formed in lower foam resin layer (53). Incidentally, the structure of insole (5) itself can be applied to a baseball shoe that has cleats and does not have projections (4).

[0014]

As shown in Figure 2 upper (3) of the sport shoes in the aforementioned constitution is constituted by laminating suede-like non-woven fabrics (31) and (33) having napped surfaces to the front and back of woven fabric (32), so that upper (3) fits the foot well and the shoe is lightweight. In particular, the sections of outer surface (31a) and inner surface (33a) that are farthest from neutral axis (C) of the material constituting upper (3) are napped, and there is hardly any resistance to bending in these napped sections. Therefore, the flexural rigidity of the material that composes upper (3) is remarkably low. As a result, it fits the foot readily and ball control becomes easy.

[0015]

Also, in this sports shoe resin projections (4) are provided even for heel part (36) as well as for front foot part (35), as shown in Figure 1. Therefore, the ball control becomes accurate even for a backward pass by means of a heel kick.

[0016]

Moreover, because resin projections (4) were provided for heel part (36) as well as for front foot part (35), as mentioned above, so that even upper (3) can be protected from wear resulting from sliding as well as from kicking. Therefore, use of a material with low wear resistance, such as Ecsaine (registered trademark), etc., as the napped non-woven fabric is possible, and improvement in the fit and decrease in the weight of the shoes, which is necessary in soccer shoes, can be achieved.

[0017]

Also, in this sports shoe the outer surface of upper (3) is napped, so that the resin easily impregnates napped section (31a) of upper (3), as shown in Figure 2. Consequently, resin projections (4) are severely fixed to upper (3). Moreover, if resin projections (4) and upper (3) consists of the same kind of synthetic resin, the affinity between upper (3) and resin projections (4) will be good, so that the fixing strength will be enhanced. Therefore, even if a great impact force is received there is no concern that resin projections (4) will separate from upper (3).

[0018]

Also, in the present embodiment, the Young's modulus is set to be greater in lower foam resin layer (53) of insole (5), as shown in Figure 3(b), than upper in foam resin layer (52). Consequently, the thrusting force from cleats (1) is easily distributed, so that the impact force against the sole of the foot is minimized without making insole (5) too thick.

[0019]

Furthermore, in this embodiment, many small through-holes (53a) are formed in lower foam resin layer (53), so that the retention of air between the two foam resin layers (52) and (53) can be prevented when lower foam resin layer (53) is bonded to upper foam resin layer (52).

[0020]

Incidentally, in the aforementioned embodiment, resin projections (4) shown in Figure 1 were provided only for front foot part (35) and heel part (36), but in the present invention resin projections (4) can be provided for the metatarsal foot part (37) of upper (3) in addition for front foot part (35) and heel part (36), as shown in Figures 4 and 5. Furthermore, in the aforementioned embodiment, a sports shoe used for soccer that has cleats (1) was described, but the present invention can be applied to sports shoes used for football or to other sports shoes such as rubber-soled running shoes that do not have cleats, as shown in Figure 6.



[0021]

Effects of the invention

As explained above, according to the present invention, the outer surface of the upper is formed from a napped suede-like non-woven fabric, so that the upper fits the foot well and is lightweight. Also, multiple projections were provided not only at the front foot part of the upper but also at the heel part, so that ball control becomes easy even for a backward pass by means of a heel kick. Furthermore, multiple projections were provided for the front foot part and the heel part of the upper. Therefore, even if a light and flexible suede-like material of low wear resistance is utilized, the projections protect the upper from damage resulting from kicking and sliding, so that use of such materials becomes possible. Thus, by providing multiple projections not only at the front foot part of the upper but also at the heel part, freedom in material selection and in addition ball control for a backward pass are enhanced, and ball control, wear resistance, lightness in weight, and fit can be simultaneously improved.

[0022]

Also, in the invention according to Claim 2, the material for the front foot part of the upper is formed from a laminated material, and a napped non-woven fabric is used for the front and back layers. Consequently, the napped sections of the front and back layers do not have any resistance to bending, so that the flexural rigidity of the material is remarkably low, and the fit and lightness in weight are improved even more.

[0023]

Also, in the invention according to Claim 3, the non-woven fabric and the backing material are stitched to each other rather than being bonded to each other, so that the flexibility of the material at the front foot part of the upper is retained.

[0024]

On the other hand, in the invention according to Claim 4, the projections are fixed to the non-woven fabric by means of a synthetic resin impregnating the outer surface of the napped non-woven fabric, so that a high attachment strength can be obtained.

[0025]

Also, according to the invention in Claim 5, the insole is formed with the layers, and moreover, the Young's modulus of the lower foam resin layer is set to be greater than that of the upper foam resin layer, so that the impact force against the sole of the foot can be cushioned without making the insole too thick.

[0026]

Furthermore, according to the invention in Claim 6, many through-holes are formed in the lower foam resin layer, so that it possible to prevent air from being retained between the two foam resin layers during fabrication.

#### Brief description of the drawings

Figure 1 is a side view of a sports shoe showing the first embodiment of the present invention.

Figure 2 is a cross section showing an enlarged view of a projection.

Figure 3(a) is an oblique view of the insole and (b) is a cross section showing an enlarged view of a cleat.

Figure 4 is a side view of a sports shoe showing the second embodiment of the present invention.

Figure 5 is a side view of a sports shoe showing the third embodiment of the present invention.

Figure 6 is a side view of a sports shoe showing the fourth embodiment of the present invention.

#### Explanation of symbols

(1)...cleat, (3)...upper, (31)...non-woven fabric of the outer surface layer, (32)...cotton fabric (backing material), (33)...non-woven fabric of the inner surface layer (backing material), (35)...front foot part, (36)...heel part, (4)...resin projection, (5)...insole, (52)...foam resin layer, (53)...foam resin layer.

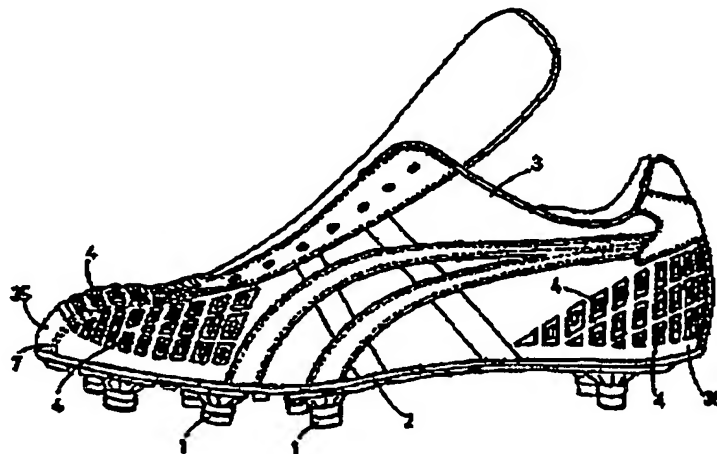


Figure 1

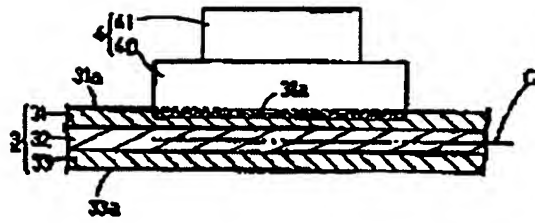


Figure 2

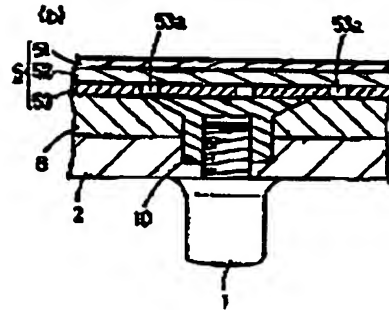
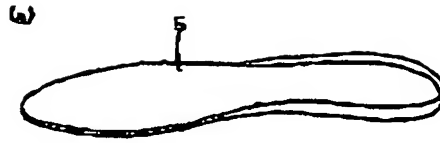


Figure 3

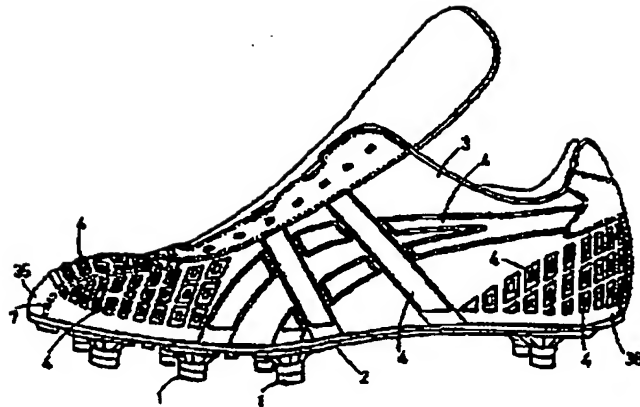


Figure 4

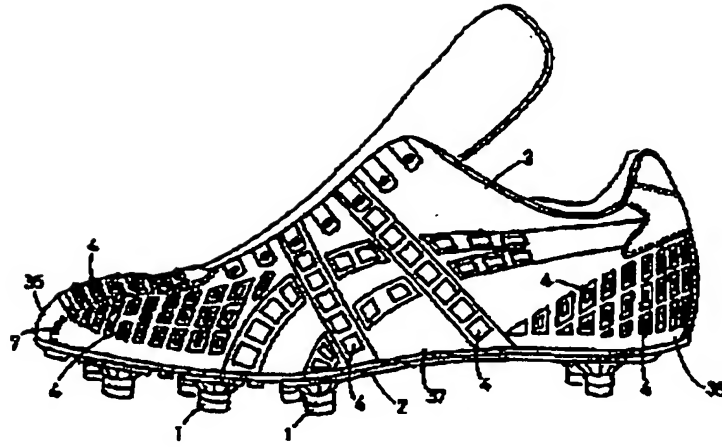


Figure 5

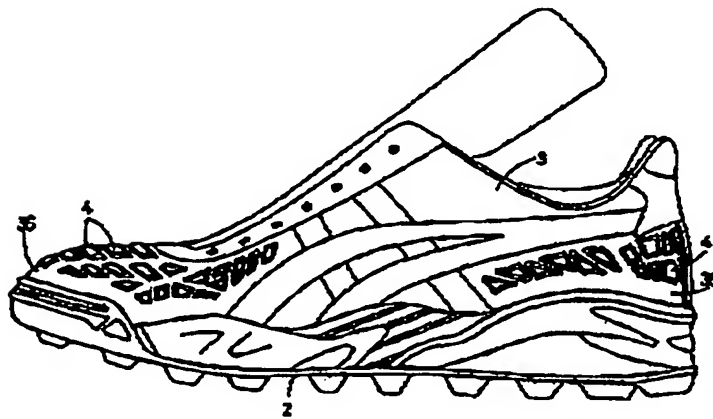


Figure 6